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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,866	04/13/2004	Hiroko Tsukamoto	T36-165693M/RS	2660

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EXAMINER	
SANEI, HANA ASMAT	
ART UNIT	**PAPER NUMBER**
2879	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,866	TSUKAMOTO ET AL.	
	Examiner	Art Unit	
	Hana A. Sanei	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 6-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-3 and 6-14* is/are allowed.

6)☒ Claim(s) *15 and 18-24* is/are rejected.

7)☒ Claim(s) *16 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/12/07 has been entered.

Cancellation of claims 4-5 has been entered.

Claims 1-3, 6-24 are pending in the instant application.

Election/Restrictions

Claims 4-5 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of manufacturing an LED lamp, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 1/25/06.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claim 17 is objected to because of the following informalities: The phrases "the gold layer and the nickel layer" lack proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 15, 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Susumu et al (JP 08-330637) in view of Oshio et al (US 6274890 B1) in further view of Okazaki (US 2002/0024299).

Regarding Claim 15, Susumu teaches a metal pattern (3, conductive pattern, [0007], see at least Figs. 1-2) formed on a substrate (2); a resist layer (7, solder resist film) directly bonded to a surface of the metal pattern; a light-emitting element (1, light emitting diode) formed on the substrate and electrically connected to the metal pattern (Fig. 2). Susumu is silent regarding the material of the metal pattern.

In the same field of endeavor, Oshio teaches a light-emitting device (see at least Fig. 1) a metal pattern (21,22) comprising a copper layer (Cu-based frame, Col. 10, lines 15-20) in order to provide an inexpensive semiconductor light emitting device (Col. 58-60).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the composition of the metal pattern, as disclosed by Oshio, in the light-emitting device of Susumu in order to provide an inexpensive

semiconductor light-emitting device. Susumu-Oshio fails to teach a resin frame member.

In the same field of endeavor, Okazaki teaches a light emitting device (see at least Fig. 3) resin frame member (5, reflective case; [0024]) fixed onto the substrate (4, chip substrate) through an adhesive agent (epoxy adhesive, [0024]) wherein light transmissive resin (7) is packed in the frame of the resin frame member; and to form such a structure that the resist (7 of Fig. 1 of '637) is at least partially put between the substrate and the resin frame member in order to ensure a high reflection efficiency of visible light ([0024]). It should be noted that at least a portion of the frame member is formed on the resist layer (7 of Fig. 1 of '637) of Susumu-Oshio. Furthermore, in the additional manufacturing step Okazaki, the placement of the frame member following the insertion of the resist layer ensures that the frame member is formed on the resist layer.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to add the resin frame member, as disclosed by Okazaki, in the device of Susumu-Oshio in order to ensure high reflection efficiency of visible light.

Regarding Claim 18, Susumu-Oshio-Okazaki teaches that that at least a portion of the resist layer is formed between the substrate and the frame member (Fig. 3 of '299).

Regarding Claim 19, Susumu teaches a light-transmissive resin (6, mold section by a transparence resin, [0007]) formed on the substrate and sealing the light-emitting element.

Regarding Claim 20, Susumu-Oshio-Okazaki teaches that an adhesive layer (epoxy adhesive, [0024] of '299) is formed between the resist layer and the frame member.

Regarding Claim 21, Susumu-Oshio teaches that the copper layer comprises a lowermost layer of the metal pattern (Fig. 1 of Oshio). The "lowermost layer" may simply indicate the inclusion of a single layer in the "metal pattern."

Regarding Claim 22, Susumu teaches a substrate (2, see at least Figs 1-2) on which a light-emitting element (1, light emitting diode) is mounted; metal pattern (3, conductive pattern, [0007]) formed on the substrate; a resist layer (7, solder resist film) directly bonded to a surface of the metal pattern. Susumu is silent regarding the material of the metal pattern.

In the same field of endeavor, Oshio teaches a light-emitting device (see at least Fig. 1) a metal pattern (21,22) comprising a copper layer (Cu-based frame, Col. 10, lines 15-20) in order to provide an inexpensive semiconductor light emitting device (Col. 58-60).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the composition of the metal pattern, as disclosed by Oshio, in the light-emitting device of Susumu in order to provide an inexpensive semiconductor light-emitting device. Susumu-Oshio fails to teach a resin frame member.

In the same field of endeavor, Okazaki teaches a light emitting device (see at least Fig. 3) resin frame member (5, reflective case; [0024]) fixed onto the substrate (4,

chip substrate) through an adhesive agent (epoxy adhesive, [0024]) wherein light transmissive resin (7) is packed in the frame of the resin frame member; and to form such a structure that the resist (7 of Fig. 1 of '637) is at least partially put between the substrate and the resin frame member in order to ensure a high reflection efficiency of visible light ([0024]). It should be noted that at least a portion of the frame member is formed on the resist layer (7 of Fig. 1 of '637) of Susumu-Oshio. Furthermore, in the additional manufacturing step Okazaki, the placement of the frame member following the insertion of the resist layer ensures that the frame member is formed on the resist layer.

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to add the resin frame member, as disclosed by Okazaki, in the device of Susumu-Oshio in order to ensure high reflection efficiency of visible light.

Regarding Claim 23, Susumu-Oshio-Okazaki teaches resist layer (7 of Susumu) reaches other than an exterior side surface of the frame member (refer to Fig. 1 of Susumu).

Regarding Claim 24, Susumu-Oshio-Okazaki teaches resist layer (7 of Susumu) reaches other than an exterior side surface of the frame member (refer to Fig. 1 of Susumu).

Allowable Subject Matter

A. Claims 1-3, 6-14 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a light emitting diode (hereinafter referred to as LED) comprising a substrate coated with a metal pattern formed as an electrically conducting portion including films of copper (Cu), nickel (Ni) and gold (Au) laminated successively in this order on the substrate; a resin frame member fixed onto the substrate through an adhesive agent; a light-emitting element fixed into a frame of the resin frame member on the substrate so as to be electrically connected to the metal pattern; a resist partially formed between the substrate and the resin frame member; and a light-transmissive resin packed in the frame of the resin frame member to seal the light emitting element with the light-transmissive resin.

However, the prior art of record neither shows nor suggests the resist being bonded onto a nickel-free or gold-free surface of the copper film of the metal pattern (the metal pattern including copper (Cu), nickel (Ni) and gold (Au) laminated successively in this order on the substrate) as set forth in Claim 1.

Claims 2-3, 6-14 are allowable because of their dependency status from Claim 1.

B. Claim 16 is objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including al of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a light-emitting diode (LED) lamp comprising: a metal pattern formed on a substrate and comprising a copper layer; a resist layer directly bonded to a surface of said copper layer; a light-emitting element formed on said substrate and electrically connected to said metal pattern; and a frame member

formed outside said light-emitting element, at least a portion of said frame member being formed on said resist layer.

However, the prior art of record neither shows nor suggests a motivation for the metal pattern further comprises a nickel layer formed on said copper layer and a gold layer formed on said nickel layer as set forth in Claim 16.

C. Claim 17 is objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including al of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

The prior art of record teaches a light-emitting diode (LED) lamp comprising: a metal pattern formed on a substrate and comprising a copper layer; a resist layer directly bonded to a surface of said copper layer; a light-emitting element formed on said substrate and electrically connected to said metal pattern; and a frame member formed outside said light-emitting element, at least a portion of said frame member being formed on said resist layer.

However, the prior art of record neither shows nor suggests a motivation for a gold layer and a nickel layer being formed on a side surface of said resist layer as set forth in Claim 17.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hana A. Sanei whose telephone number is (571) 272-8654. The examiner can normally be reached on Monday- Friday, 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hana A. Sanei
Examiner

Joseph Williams
Primary Examiner